

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:
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PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Applicant's or agent's file reference 2003UR016		Date of mailing (day/month/year) 18 JAN 2005
International application No. PCT/US04/04334		International filing date (day/month/year) 13 February 2004 (13.02.2004)
International Patent Classification (IPC) or both national classification and IPC IPC(7): G01V 1/00 and US Cl.: 367/43,46,47,48; 702/14,17		Priority date (day/month/year) 01 April 2003 (01.04.2003)
Applicant EXXONMOBIL UPSTREAM RESEARCH COMAPNY		

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☒ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/ US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703) 305-3230	Authorized officer <div style="text-align: center;"> Thomas Tarcza </div> Telephone No. 703-306-4180
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Form PCT/ISA/237 (cover sheet) (January 2004)

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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/US04/04334

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

☐ a sequence listing

☐ table(s) related to the sequence listing

b. format of material

☐ in written format

☐ in computer readable form

c. time of filing/furnishing

☐ contained in international application as filed.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

WRITTEN OPINION OF THE
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International application No.
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Box No. V Reasoned statement under Rule 43 bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims <u>1-46</u>	YES
	Claims <u>NONE</u>	NO
Inventive step (IS)	Claims <u>1-46</u>	YES
	Claims <u>NONE</u>	NO
Industrial applicability (IA)	Claims <u>1-46</u>	YES
	Claims <u>NONE</u>	NO

2. Citations and explanations:

Claims 1-46 meet the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest computing a deconvolution filter based on the specifically claimed desired impulse response.

Claims 1-46 are novel based on the steps in independent claims 1 and 46. Claims 1 and 46 have the steps of :

c) specifying a desired seismic data processing impulse response, wherein high and low frequency portions of an amplitude spectrum of said impulse response taper to zero at a faster rate than does the high and low frequency portions of an amplitude spectrum of the vibrator signature;

d) computing a deconvolution filter from the ratio of the desired impulse response and the computed vibrator signature.

A search of the prior art did not show documents that specify a desired impulse response wherein the amplitude spectrum of this impulse response tapered to zero faster than the amplitude spectrum of the vibrator signature. The art also did not show using this type of desired impulse response to compute a deconvolution filter based on a ratio with the computed vibrator signature.

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Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

Claim 22 is objected to under PCT Rule 66.2(a)(iii) as containing the following defect(s) in the form or contents thereof:

Claim 22 states that "the location of the detectors is selected form the group ..." when it is meant to read "selected from."